Solar–Terrestrial Physics I

Counsel: Tuesday & Thursday, 11:30 - 13:00

Office: Room 532 in the Applied Science Bldg.

Homepage: //solardynamicslab.khu.ac.kr/~magara

Goals:

- Understand basic properties & generation mechanisms of solar dynamic phenomena
- Understand interactions between solar plasmas and the magnetosphere of the Earth
- Understand several basics of plasma physics

Lecture characteristics:

Theory: 60%, Practical Training: 40%

Instruction methods:

Discussion, Audi-visual Education, Presentation

Evaluation method:

Mid-term Exam... 30%, Final Exam... 30%, Homework/Report... 30%, Attendance... 10%

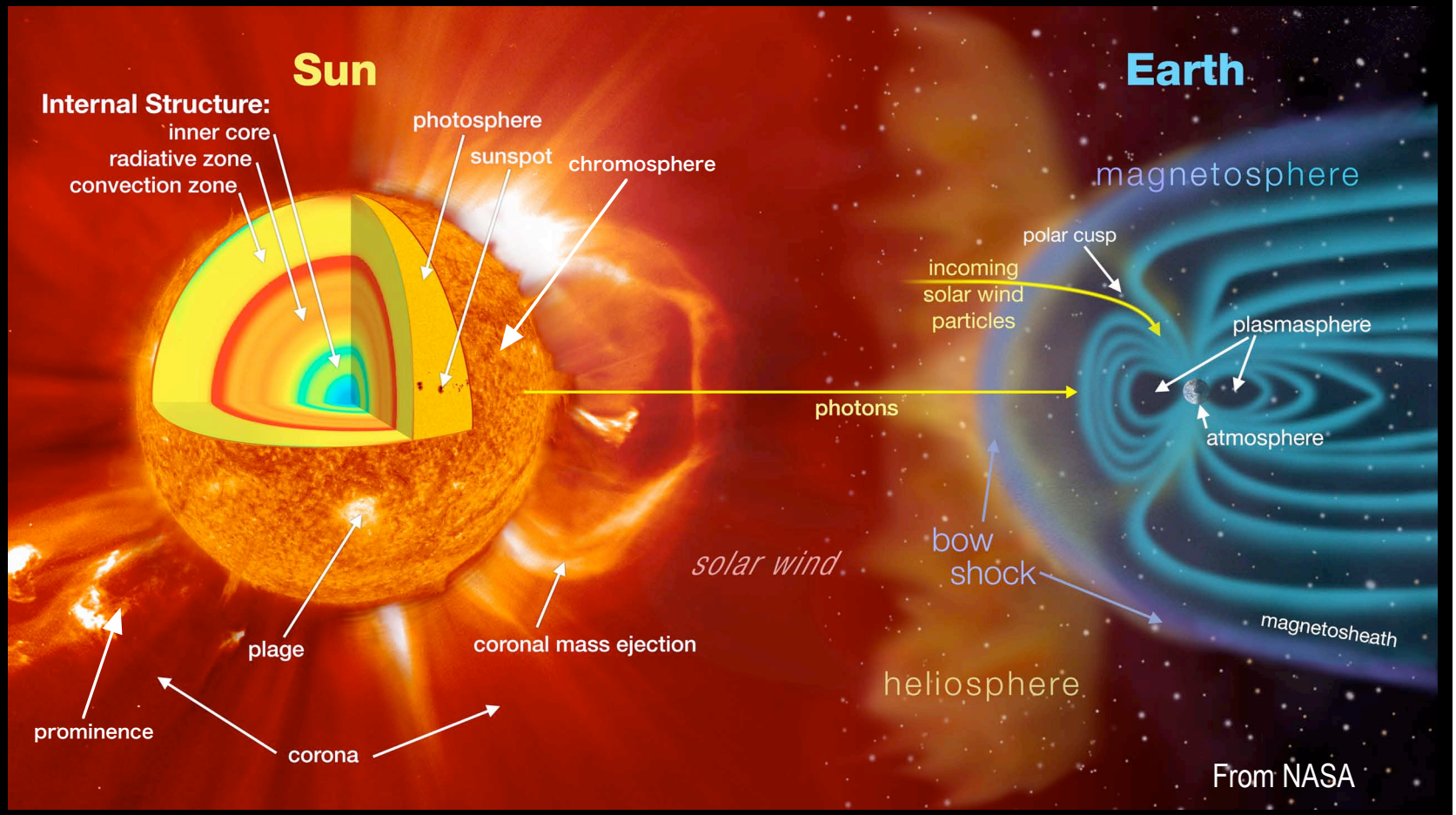
Textbooks:

- Introduction to Space Physics (M.G. Kivelson & C.T. Russell, Cambridge University Press, 1995, 9780521451048)
- The Sun: An Introduction (Michael Stix, Springer, 2004, 9783540207412)
- Solar Magnetohydrodynamics (E.R. Priest, D. Reidel Publishing Company, 1984, 9789027718334)
- Plasma Physics (P.A. Sturrock, Cambridge University Press, 1994, 9780521448109)
- Gas dynamics (F.H. Shu, Univ. Science Books, 1992, 9780935702651)

Assignment:

Each student should submit a report, in addition to taking mid-term and final exams.

Sun–Earth system



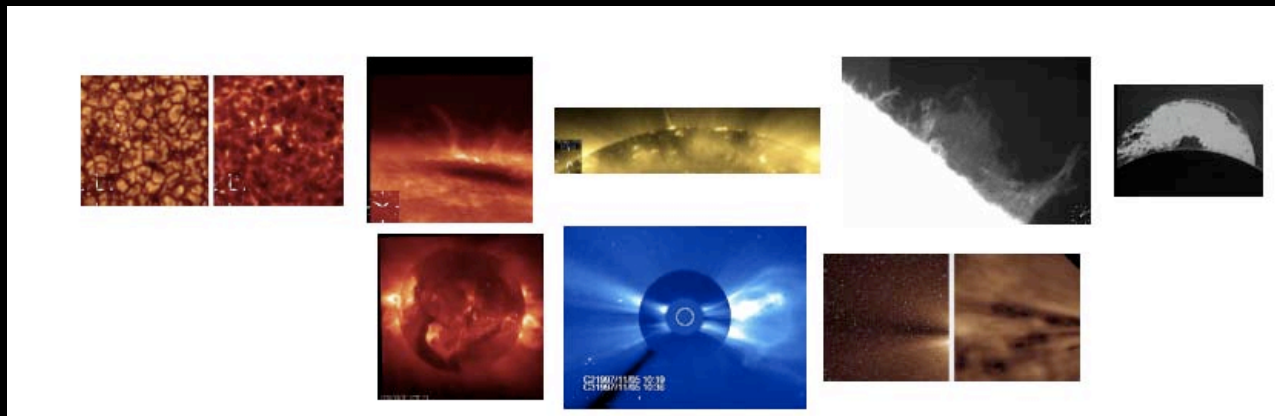
When, where, and how do solar dynamic phenomena occur? => **solar physics**

When, where, and how do solar dynamic phenomena affect the Earth? => **space weather**

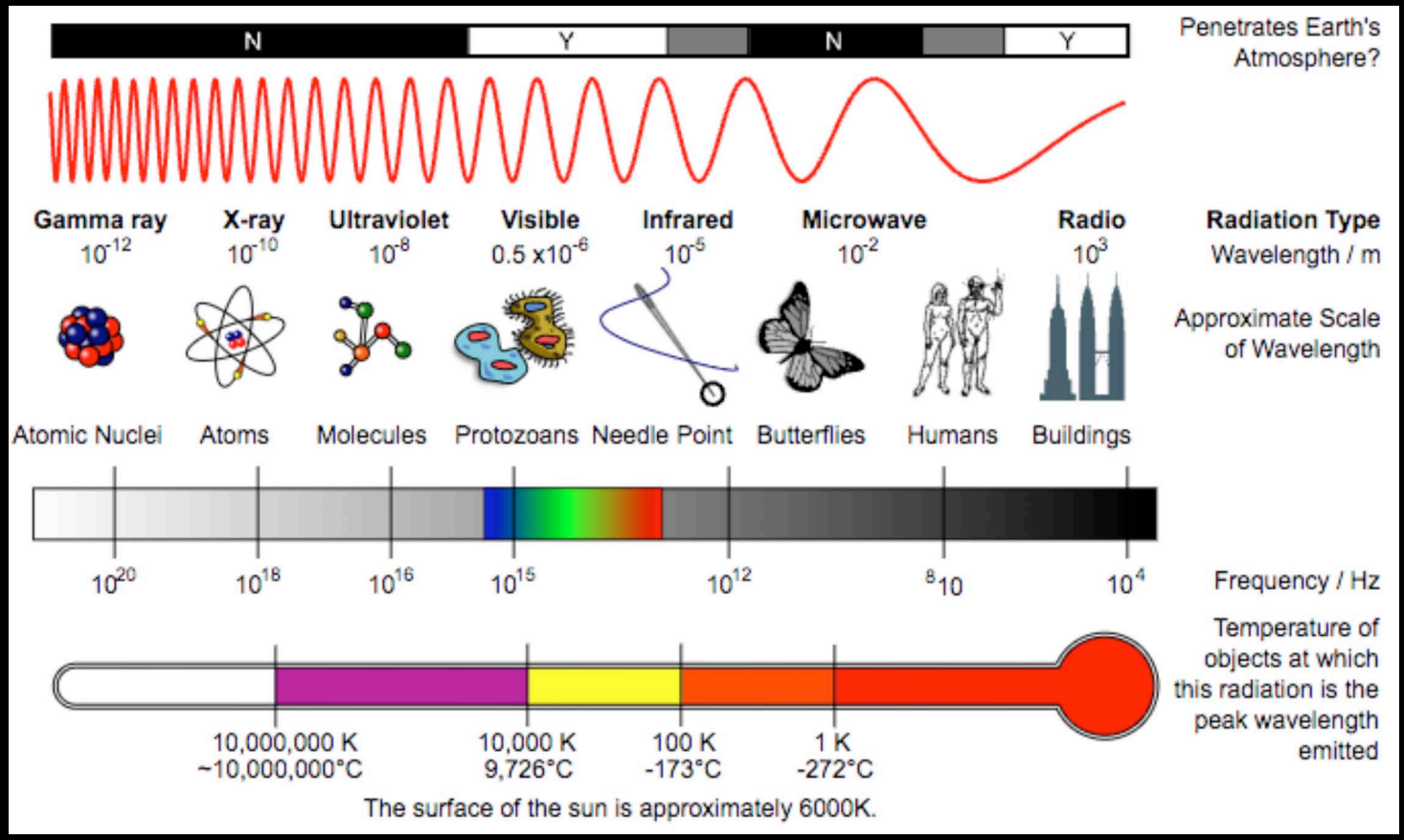
Although the Sun looks uniform and steady…

Dynamic Sun I

(short time-scale phenomena: ~ hours)



Multi-wavelength observation => information on a target (e.g. temperature distribution)



The electromagnetic spectrum. "EM Spectrum Properties reflected" by Inductiveload, via Wikimedia Commons